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CONTENTS.

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THE

LOUISVILLE MEDICAL NEWS.

"NEC TENUI PENNÂ."

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VENTILATION OF DWELLING-HOUSES.*

BY W. S. HAYMOND, M.D.

Professor of the Principles and Practice of Surgery, in the Central College of Physicians and Surgeons.

The subject I am invited to respond to is, perhaps, in its relation to the public health, one of the most important that can claim the consideration of this association. It is a subject, however, too comprehensive when considered in all its bearings to be exhaustively presented upon an occasion like this. I shall content myself, therefore, with a presentation of some of the salient points of the topic, and these will at least serve to call attention to the great sanitary importance of the ventilation of habitable buildings.

In the early settlement and development of the country, the haste to acquire wealth and competency, and the aggrandisement of land, sanitation, and especially the sanitary details in the construction of dwelling-houses and public buildings received but little consideration.

This has, perhaps, been the case in all new countries, necessarily in early ages when chemistry and physical science were yet unborn, but in this age of greater illumination we are beginning to see and appreciate its benefits.

The better understanding and attention to sanitary measures during the present century have greatly lessened the mortality ratio in all civilized countries. It has already disarmed the great epidemics that formerly scourged cities and devastated empires. We have no longer any dread, and are almost unable to conceive of such destructive pestilences as the "Athenian plague," so vividly described by Thucydides, and the plague familiarly known as the "Black plague," a "black death," born of filth and the total disregard and ignorance of the laws of health, that swept over Europe in the fourteenth century, depopulated cities and towns, and spread the germs of death among the rural population of many countries.

These have passed away, so far as Europe is concerned, and will, under the advancement of sanitary knowledge, probably never reappear. We can scarcely realize what those maladies were from the imperfect descriptions of them that have been transmitted to us by the writers of those times, but we know enough about them to satisfy ourselves that they were engendered by a violation of all the laws of decency and health, and sprang from the bosom of universal filth. Cullen thought "it unfit for a person who has never seen the disease ('plague') to attempt its peculiar history."

Cholera, too, by proper sanitary measures, has been shorn of most of its terrors, and when universal sanitation is adopted will disappear from the earth.

Coming down directly to our own time, no more striking illustration can be presented of man's power to prevent disease than the rapid decline that is now going on in the occurrence of malarious affections. Physicians who practiced medicine in certain parts of this State twenty or thirty years ago can now testify that these disorders are becoming comparatively rare, that their malignancy has diminished a hundred-fold, and that there is not now one well-marked typical case where there were then fifty. Why is this so? What has brought about this extraordinary change? Without stopping to speculate about the mysterious nature of malaria, a peculiar poison or influence which has eluded all efforts to determine its exact essence, we know that it is growing milder and disappearing in

*Read before the Indiana State Sanitary Society, March, 1884.

certain sections, and the forthcoming generation of inhabitants will probably never realize what a scourge it was to their forefathers.

The building of roads and railroads, the general improvement of the country, its thorough drainage by ditches and tile-drains, by which the surface water has been carried off, and its alluvial bottoms and stagnant marshes converted into dry and tillable land, have brought about this fortunate result. These agencies then deserve to be ranked among the most valuable sanitary measures, and they serve to show in a striking manner what may be accomplished in other directions by well-directed sanitary efforts. By them the general mortality of this State has been materially diminished, the health of the people greatly enhanced, and the atmosphere at large divested in a great degree of a noxious element.

But how is it when we come to consider that sacred spot called home, that limited area and inclosure where we live, sleep, and breathe? Here are limited air spaces tightly excluded by walls of brick, wood, or stone, from the great mobile atmosphere without, and, if we are not careful, liable to become choked and stagnant and charged and even supercharged with effete and noxious matters and foul emanations from every form of excreta. If such should be the case, and it unfortunately often is, our homes become unhealthy abodes and filled with the germs of disease, which are liable at any moment, under favorable conditions, to spring into activity and thus cause some fatal malady. Thousands of persons perish annually from diseases caused in this manner, besides tens of thousands who sicken and suffer in a greater or less degree. If a child falls into a pail or tub of boiling water and dies from scalding, it is called an unavoidable accident; if it is given, by mistake, a dose of poison and perishes, it is attributed to carelessness; but if it sickens and dies from an infectious disorder due to some *materies morbi* generated in putrid air or polluted water, then, the cause being occult, it is likely to be attributed to some mysterious dispensation of Divine Providence. Yet the reason, on the slightest reflection, is as clear in one case as the other.

The time, I think, is close at hand when sanitation will be duly considered, studied, and understood. If thorough drainage of the country has dispelled malaria, if cleanliness and quarantine have held cholera in abeyance and robbed it of its chief terrors, so will proper sanitary measures, intelligently applied in the homes of the people, prevent disease, clip the wings of infection, in a miraculous degree diminish the death-rate, and besides contribute in a high degree to the happiness and prosperity of the people.

The subject of ventilation, taken in a comprehensive sense, embraces all matters relating to the selection of location and soil for building sites, not only for dwelling-houses, but also for towns and cities, the rules governing laying out of streets so as to prevent overcrowding as well as the construction of buildings according to sanitary laws. It extends even much farther than this, including warming, combustion of fuel, lighting, the removal of excreta and garbage, water-supply, as well as a general regard to the immediate surroundings. Some of these I shall be able only to allude to in a general way, noticing only the most important points. Most of the cities and towns that will ever attain any magnitude in our State have already been founded and will remain with a portion of their imperfections. Commercial interests and speculation seem to have been the principal factors in a majority of cases that determined their location, while sanitary considerations were little thought of. It may also be said that in the construction of many dwellings and many public buildings sanitary considerations were not invoked. So that for the most part we must consider them as we find them; but there are but few sites where the judicious application of sanitary measures will not afford material improvement and often satisfactory results.

Deep drainage, well-constructed sewers, tile-drains for surface water, may change damp and impervious grounds into healthy locations; but the defects of construction in thousands of private dwellings and tenement houses in reference to ventilation and sunlight will remain—but with all of their defects much may be done in the way of rendering them more healthful. The sanitarian of the future will doubtless direct attention to this important matter, and the public, in time, be educated to consider this as well as other proper measures.

The day is close at hand when sanitary science will rise in dignity and assume such importance that it will be taught in schools and colleges, and take rank as one of the most useful branches of practical knowledge. Sanitary associations will become the *primum mobile* in this good work, and

through their agency it will sooner or later become popularized.

Construction of Buildings. There are many defects in the construction of dwelling-houses which, regarded from a sanitary stand-point, might have been remedied at a trifling cost. In this climate of sudden changes, part of the year being extremely cold and another portion of it almost of tropical heat, too little thought has been taken to render them less frigid in winter and more endurable in summer. Two of the great objects in having houses certainly are protection against cold and shelter from excessive heat. A large number of our dwellings are badly adapted to either purpose. Being mere shells with thin walls, the heat generated within them with a large consumption of fuel is rapidly abstracted by the cold winter atmosphere and chilling winds, so that an equable and comfortable degree of temperature, in extremely cold weather is not easily maintained. In summer many of them are more like hot ovens than comfortable abodes. For both of these reasons, independent of the question of ventilation, they are unhealthy. In severe weather the inmates, especially old, feeble or delicate persons and young children are liable to catarrahal and inflammatory affections, more especially pulmonary. I have scarcely ever known a severe and sudden change of weather or "blizzard" to occur without a marked increase in the mortality of aged or feeble persons; and I believe it is safe to estimate that not less than a thousand deaths every winter in this State may be attributed to those sudden vacillations of temperature. Cold, damp, and uncomfortable houses may be justly regarded as potent factors in the causation. Most of these persons under favorable circumstances, according to the laws of expectancy, should have lived at least ten or fifteen years longer. Thus we may safely attribute to this cause an annual sacrifice of not less than fifteen thousand years of human existence.

The human body requires to be kept constantly at a temperature of 98° F. This is effected in cold weather by extra clothing, the protection of house, and artificial heat; in hot weather by regulating the capacity of the functions of the skin, lighter clothing, shade and shelter.

In the terrible epidemic of cerebro-spinal meningitis of 1872, I was able to attribute the exciting cause of several fatal cases among children, especially, to the cold floors of dwellings. These were frame houses set on blocks at the four corners, or otherwise had defective underpinning, by which means the temperature underneath the floors was continually the same as the outer atmosphere, which varied from the freezing point to 20° below zero. The heat from the low stoves radiated out horizontally or upward, and but little of it was utilized in warming the thin floors, and that little only at the distance of three or four feet from the stoves. Practically there was but little difference between the temperature of the upper surface of those floors within the heated apartments and the air beneath. Hence small children playing or sitting on such floors were exposed to a dangerous degree of cold and made liable to suffer the most serious consequences. Here, then, in all such houses, we will find a cold atmosphere surrounding the feet, while a much higher temperature exists above.

All buildings should have good foundations, and instead of the eight inch brick wall commonly placed under frame houses, it should be at least sixteen, so as to preserve a temperate atmosphere underneath. All buildings for residence not having basements should have double lower floors, and this would cost much less than the unnecessary outward ornamentation often witnessed. The carpet, to be sure, assists some in cold weather, though objectionable in itself, but the protection it affords is not to be compared with the double floors, with a hollow space between them which may be partly filled with some non-decomposing material, so as to afford an additional barrier against the abstraction of heat from the apartment. The fuel saved in a year or two would prove the economy of this improvement.

Buildings unprotected underneath are far more unhealthy and dangerous in winter than the primitive log cabins with low rooms, open chimneys, dirt or puncheon floors. The limited amount of heat radiated from the log fire to the floor was longer retained, and without any air current beneath to abstract it readily away. Thousands of lives have been sacrificed to defective floors and foundations.

The time will come, I apprehend, when many people will see the wisdom of building their houses with double or heavier walls, especially those parts of their buildings intended for winter occupancy. The saving of fuel in two or three winters would pay for the additional cost. Fuel is becoming an expensive commodity and is a heavy annual tax upon people in limited

pecuniary circumstances. There is a wide, open field for the display of practical talent in the architecture of dwellings that will render them more healthful and comfortable at less expense for fuel. It is said that Conaro, the feeble-bodied Italian centenarian, who desired to live long, constructed his house so that it would keep him warm in winter and cool in summer, and thus protected him from the dangers incident to extremes of temperature. It will generally happen that houses well adapted for winter protection are likewise the most comfortable in summer.

As a great amount of cold penetrates buildings in winter through glass windows, all apartments intended for winter use should have double windows, viz., two sets of sash and glass placed a little distance apart so as to maintain between them a hollow air space. It is astonishing the difference it will make in the temperature of a room in cold weather, and besides this, as I shall soon show, it affords one of the simplest, cheapest, and most effective means for ventilation.

The evil of badly constructed houses in the heated term is obvious. The roof and walls are penetrated by the solar rays until the apartments become like heated ovens, so that they are very uncomfortable to lodge in; the sleeper in the early part of the night sweats and roasts, and after he falls asleep in the latter hours of the night the perspiration becomes checked, chilling is produced, and from such oscillations of temperature congestion or inflammatory diseases are either produced or the foundation laid for serious organic derangements. Hence we will now be able to see the sanitary importance of the application of proper principles in the construction of dwelling-houses.

Ventilation. However important the construction of houses may be in regard to comfortable temperature, the proper ventilation of them is still more so. Air is one of the elements of life, a vital physiological food, and we are only adapted to it as it exists in its pure and natural state. We live, move and breathe at the bottom of an atmospheric ocean, a mobile element almost invariable in the proportion of its constituents, however variable its density may be at different altitudes.

The atmosphere at large is composed of 21 parts of oxygen and 79 of nitrogen, and by volume $\frac{1}{2500}$ part carbonic acid, or .4 per 1,000. When any material change takes place in the constituents of the air, or it is surcharged with poisonous gases, or emanations, as happens in close or ill-ventilated apartments, then it becomes unfit for respiration and engenders disease. The air in an ill-ventilated room, if occupied by one or more persons, becomes rapidly changed by a loss of oxygen and an increase of carbonic acid, a narcotic poison. Now when this defective and unwholesome air becomes further polluted by exhalations from the lungs and body, the foul gases from cellars and closets, the effluvia of decomposing organic products from cellars and other places, foul matters due to uncleanliness of person and clothing, to which may be added the stream of polluted air from without that rushes into the building through doors, windows, and crevices, such as the effluvia from matters thrown out from the kitchen back door or out at windows, the horrid stench from the pig-sty, stable, privy, cess-pool or stinking gutter, midden heap, or filth promiscuously scattered about the building, then we have around us the elements that breed disease, pestilence, and death. To such causes we may attribute some of the most destructive maladies of early life, such as diphtheria, scarlatina, and various fevers.

From causes of this nature more deaths have occurred ten times over than from all the battles of the world, with casualties and accidents of every character added in. It has been estimated by some that "improperly keeping pigs has caused much more human sickness and destroyed more life than all the battles the country has ever been engaged in."

My experience and observation of diphtheria has led me to attribute its causation mainly to the defective ventilation and bad air of dwellings and school-houses. In the cold month of March, 1864, I was called to see a boy, about twelve years old, attacked with diphtheria. The case was a typical one though not an unusually severe one. The family consisted of eight persons, the parents and six children, ranging in age from one year up to about fifteen. All lived and slept in a small, low back-room, about eight by sixteen feet, with two very small windows and no outside door. A stove in the middle of the room and three beds occupied more than half the space. The weather being very cold, every aperture was kept closed to exclude all outside air. The patient soon recovered and was able to go out and do light work.

In a few days after he took the disease

two other children were violently attacked and recovered only after a protracted confinement. In about a month the boy who was first attacked, continuing to live and sleep in the same room, was again taken down with the disease, shed from his throat an immense quantity of false membrane, but recovered and was apparently well long before the other two were out of danger. In the meantime all the other children contracted the disease in the most malignant form, and finally the boy who had had it twice and recovered was attacked the third time, his nostrils becoming the seat of the false membranes, but again recovered. One of the children died, and two of them lingered for about four months, having all the sequelæ ever known to follow this dread disease. So great was the degree of blood-poisoning engendered in one of the children, and so foul was the atmosphere it was kept in, that it became absolutely necessary to have it removed to a neighboring house, where it eventually recovered.

Now these were the only cases of diphtheria that occurred during that spring within a radius of ten to twenty miles of that place, and I have never doubted that the cause of the disease was bad ventilation, or from the foul air due to bad ventilation. I have since entertained the doubt whether it would be possible for any person to contract the disease if living continually in the open air, or in an atmosphere of standard purity. School-children, breathing the stifling and putrescent atmosphere of school-rooms, are known to be prone to diphtheria, and from such factors some of the worst epidemics of this malady have sprung.

The causes that disturb air and change it in close apartments are the disappearance of oxygen by respiration and the loss by combustion of fuel for heating, gas and other material used for lighting, and the exhalation of carbonic acid from the lungs, which has been calculated volume per volume to be 100 times greater than the normal quantity existing in the atmosphere at large.

A person, by breathing, vitiates nearly every minute one cubic foot of the air of a room with carbonic acid. It is held by the best authority that air becomes dangerous and unfit for respiration when it contains only double the normal quantity of carbonic acid in the atmosphere, or .8 per 1,000 in volume. Hence we can readily comprehend the danger where there is overcrowding, small space, deficient ventilation, stagnant air of small bed and living-rooms and school-houses. Enter a crowded street car and you will at once become aware that you are breathing an atmosphere overcharged with carbonic acid, and I would rather walk two miles than ride in one and be compelled to breath such pollution; yet people are willing to tax their vital organs to the utmost, even at their peril, rather than give a little wholesome exercise to their muscles. The same impure and horrid atmosphere often greets us in school buildings, churches, and other public places. Imagine some close, overcrowded beer garden or beer room, where the air is hardly ever changed, filled with tobacco smoke and every thing else calculated to add to its impurity, and you can readily judge the contaminating effect it must exert on thousands of persons who spend much of their time in such places, and we need not wonder that their days are not many nor full of glory.

I have alluded to the poisoning of air in dwellings by carbonic acid, but this is only a part of the source of pollution, subtle streams of organic matter from various sources, such as the skin, lungs, etc., constantly flow into the already deteriorated air until it becomes dangerous to life. The current of foul air ascending a ventilating shaft has an insufferable odor, and experiments have shown that when it is passed through water the latter becomes quickly putrescent. It is, then, in such polluted air as this that many people live and breathe until they lose all appreciation of what a good wholesome atmosphere is. It is amidst such pollution that the germs of disease and pestilence have their origin and to which we may justly attribute no small proportion of human mortality.

According to the experiments of Dr. Chaumont, "when the amount of carbonic acid in a room exceeds the amount in the outer air by more than two parts in a 1,000, the air in the room is not fresh."

Two parts of carbonic acid per 1,000 by volume in the air of a room above that naturally belonging to the outer air must be taken as the limit of respiratory impurity. "It has been ascertained that a person breathes out on an average six cubic feet of carbonic acid in ten hours, hence it is clear that the air of the room in which he may exist to be kept fresh must have 30,000 cubic feet in each ten hours, or 3,000 cubic feet per hour." In this climate, in severe winter weather, it will be found more or less dangerous to many persons, and un-

pleasant to all, to effect a complete change in the air of a room oftener than once in three or four hours.

According to a general rule sanctioned by good authority, each person should have one thousand cubic feet of air, which should be changed every four hours, or seven hundred and fifty cubic feet changed every three hours; and if less space is allowed, the changes must be made proportionally more rapid, which is scarcely practicable in severe weather.

While the laws of health require about this amount of air space to each person, we will often find persons sleeping and breathing in but little more than one fourth of this space. Three hundred cubic feet has been taken as the extreme limit of overcrowding.

All living- and bed-rooms in this climate must necessarily be of moderate dimensions, otherwise it will be expensive if not impracticable to maintain them in winter at a comfortable temperature. It has been calculated if a person remains in a bedroom for seven consecutive hours it will be necessary, in order that the air may be kept sufficiently fresh without change, that there should be at least twenty-one thousand cubic feet of space, and this would require a room seventy feet long, thirty feet wide, and ten feet high. Therefore we see the demonstrated necessity of ventilation, which in other words means change of air, the ready expulsion of foul air and the constant and gentle introduction of fresh air.

In addition to the deterioration of air in a room by respiration and the consumption of oxygen by the combustion of fuel for heating, gas and other means for lighting, we may mention that which takes place by the abstraction of the moisture of the air, which depends upon temperature. It has been estimated that when the air is at zero it will hold only .18 of a grain of watery vapor per cubic foot; at the freezing point, 2.35 grains; at 50°, 4.24 grains, and at 100°, 19.12 grains.

If a room should be filled with pure air at the freezing point, and then heated to 70° it will only contain one sixth part of the necessary quantity of moisture and exercise a drying effect upon the skin and lungs. The remedy is the introduction of watery vapor from the evaporating dish or reservoir. While it is impracticable in dwellings to heat very large rooms, it will be found difficult to ventilate properly very small rooms. If we take .8 per 1,000 by volume of carbonic acid as the greatest allowable impurity, a single person would require 1,500 cubic feet of air per hour, and the air could only be changed in small rooms to furnish this supply by currents that might prove highly injurious.

In considering ventilation we should remember that it is not only the foul air within that must be removed, but that the air introduced from without must be of normal purity. Therefore the laws of health require that all local impurities near a building that may contaminate the surrounding air should be removed. These have already been mentioned in sufficient detail. The air around the building loaded with the effluvia from these various sources of pollution is drawn into the building to supply the place of the heated air that escapes. No care in ventilation can render the air in a dwelling pure and healthy unless the surrounding atmosphere is free from impurities.

Enough has been said already to show the vast importance of ventilation. To attempt a practical elucidation of the principles and means by which it may be best effected would require more time than is at my command. A few practical suggestions, however, may not be amiss.

"The chief agents in ventilation are winds and movements produced in the air by variations in its density, usually brought about by variations in its temperature." Artificial ventilation by machinery, is scarcely applicable to the common dwellings of the people, and it is not likely that it will ever be adopted to any extent. Wind is one of the most potent forces in natural ventilation, though irregular in its action, happily adapted when the air without is of pleasant temperature, but in cold weather is liable to produce dangerous currents. In warm weather ventilation is generally easily effected by opening doors and windows, especially when they are on opposite sides of the apartments. This is called cross ventilation. Wind is a potent factor in ventilation; it exercises an aspiratory action on chimneys and ventilating flues. This results from a diminution of pressure over the top of the chimney or flue by which an upward current is produced carrying away the foul air within rooms. But it is important that chimneys and flues should always be higher than the building, and important for another reason, they smoke less.

When the air within an apartment is heated, as in cold weather, the cold atmos-

phere from without rushes in through every crevice or under and by the side of doors and windows, just as water would flow into a vacuum, and if there are no special openings for the heated air to escape through, it will be forced out through the same or other crevices.

Cowls placed over low chimneys greatly enhance their aspiratory action. Cellars unprovided with ventilating shafts may be readily ventilated by tubes extending outward and supplied with cowls. The holds of vessels are emptied of foul air in the same way, the winds of the sea or motion of vessels furnishing the required currents for carrying on aspiration.

The open fire-place and chimney constructed according to the old plan afforded a high degree of ventilation, but was the most expensive and wasteful of all methods of heating. The air which was carried upward in copious streams likewise carried up with it about seven eighths of all the heat generated, leaving only about 12 or 15 per cent to be utilized. This wasteful plan did very well when the country was new and the great object was to destroy all the timber possible. But the expensiveness of fuel now demands a modification in chimneys and other methods of heating.

One of the first principles of ventilation is that the fresh air supplying an apartment should be introduced in a regular manner, and diffused without causing unpleasant draft. The size, place, and number of openings have been matters of much dispute. The object to be obtained is the most perfect diffusion of the fresh air through the room with the least disturbance to those within it. It seems to be well determined that the place of exit should be as far removed as possible from the place of inlet. Upon theoretical grounds, the fresh air should be admitted at the lowest point, and the foul air escape at the highest, but this plan, in cold weather especially, is liable to cause unpleasant and even dangerous drafts. If the aperture of admission is placed a few feet above the floor (three or four feet), the current will enter in a horizontal direction, and still lower the temperature of the colder stratum of air in the room; if it is allowed to enter over the top of the upper sash, it falls down upon the heads of the inmates just as water would fall from a height. This can be very easily verified by sleeping directly under a window when the upper sash is lowered. This method of ventilation, while partly successful, does not accomplish the object satisfactorily. Since windows are essential to rooms for occupancy, they should be utilized as far as practicable for ventilation purposes, and fortunately they can be made to answer all practical ends. The simple device of Dr. Hinckes Boid is strongly recommended by Corfield, of London, in his lectures on the "Sanitary Construction and Arrangement of Dwelling Houses," and I have referred to them for information in regard to several matters in this paper on the subject of ventilation.

This simple device is nothing but a board of a few inches or more in width, which is placed immediately under the lower sash. It is made to fit tightly, and, of course, elevates the upper part of the sash the width of the board. This gives a hollow space between the upper end of the lower sash and the lower end of the upper sash. The air comes in between the two sashes and takes an upward direction, like a fountain, and diffuses itself in the heated air above and produces no draft. The same purpose can be accomplished by elevating the lower sash and placing a wide, tight fitting board immediately in front of it. Another method, acting on the same principle, is boring holes or cutting fenestra in the lower bar of the upper sash, but that is hardly sufficient, and besides greatly weakens the sash.

The louvred ventilators, made of glass or wood, are often employed. They are simple contrivances to give the entering air an upward slanting direction. Glass louvres fixed in a metal frame can be inserted in any window by removing a pane of glass from upper sash, and can be opened and shut by means of a string, and wooden ones can be placed over doors instead of transoms. The openings for the admission of air are estimated by superficial measurement, and it has been calculated that twenty-four square inches will suffice for each person, a square foot for six persons. By this rule it can be easily calculated the degree of opening required at any time.

When the double window is employed it affords one of the simplest and best means of ventilation. This is effected by raising the lower outward sash as much as may be desired and lowering the inner upward sash. The air rushes in and takes an upward direction. The double window economizes fuel, retaining heat in the room, besides affording excellent ventilation.

The old tubular system still has advo-

cates. It consists in making openings through the wall of the house just below the floor for the air to enter at and into vertical pipes five or six feet high, placed on the inside wall. The air enters them and takes an upward direction.

In addition to these means, a great many patented and other ingenious contrivances have been employed, being more or less effective. But the simple methods above described will answer all practical purposes, and are, perhaps, superior to most of the complicated devices. They cost little or nothing, and can be applied to almost any house.

The ventilation of any apartment would be incomplete and unsatisfactory without places of exit for the deteriorated air. The chimney, and especially the open fire-place, is a valuable means for giving exit to foul air. The chimney should always be higher than the building, and if it can not be made so high, it may be protected on top by a cowl or conical cap, to prevent downward draft. An opening may be made in the chimney flue near the top of the room for the foul air to escape through, and this protected by a valve. Arnot's valve is, perhaps, the best, and consists of a metal flap made to swing inside of a metal frame so that it opens into the chimney flue, but not toward the room. When there is air-pressure from the room toward the flue, the valve opens and the air of the room rushes into the chimney; when there is a downward current, the valve is closed.

A better plan is to have the air shafts placed alongside of the chimney flues, so that they may be heated, and this is best attended to in the construction of the building. They act better when heated, and for this reason should always be employed in cold weather when the chimney flue to which they are attached is used.

Ventilation is often impaired by houses being built too close to each other, and not permitting a sufficient surrounding air space. All buildings should have as much as possible the benefit of sunlight. While shade trees are useful and ornamental, they should not so surround and overshadow dwellings as to interfere with ventilation and sunshine. The streets of cities and towns should be wide, and every means taken to prevent overcrowding.

Floors are better beeswaxed, stained, or varnished than carpeted. The carpet has been considered one of the necessary evils of civilization. It holds in its meshes all the possible filth that is ever carried into the house. This dries, rises, and fills the air of the room with an infinitude of floating particles. To be convinced of the astonishing quantity of this floating dust it is only necessary to admit a ray of sunlight through a small crevice in a partially darkened apartment, when the particles will become visible. The collection of this matter on microscopic slides, and its exhibition under the microscope would furnish an interesting chapter. It is impossible to comprehend how persons who are almost constantly living in apartments filled with this floating material can escape with impunity. How far it predisposes to pulmonary complaints has not been fully determined, but that it adds materially to the mortality rate there can be no question.

Carpets, if used at all, ought to be frequently taken up and cleansed, and the most perfect ventilation maintained in apartments where they are used. If people would take as much interest in the preservation of their health as they do in some other matters, the carpet would soon go.

Wall coverings, too, may add to the impurities of the air in apartments. Paper, especially, is objectionable, and besides is often colored with arsenical paints. The laws of health would require that wall coverings should be made of some impervious material. There are different kinds of plaster that might be used, and with the surface thoroughly painted would effectually accomplish the purpose. The walls then could be thoroughly washed from time to time, and kept free from all infectious matter. This paint should not be lead but silicate, zinc or some other indestructible material.

The removal of refuse matters. This is allied to the subject of ventilation, inasmuch as the outside air that supplies buildings is liable, as has been shown, to contamination from all sources of filth immediately about the premises. It has been shown on excellent authority that in all towns where refuse matters are not removed, where filth is allowed to accumulate in streets, gutters, and alleys, about buildings, and in nooks and corners, that there is always a high death-rate, and that where they are speedily removed, the death-rate has always been greatly lessened. The danger of such accumulations is not limited to the noxious emanations imported to the atmosphere surrounding buildings, but it is the chief

source of water-pollution where shallow wells are depended upon for the water-supply. In pervious soils the water soon becomes contaminated from privy vaults, cesspools, foul gutters, kitchen refuse thrown out of the back door or window, or upon the ground contiguous to wells. From water thus polluted a host of diseases may be generated, such as all forms of intestinal derangements, typhoid and other fevers, cholera when it prevails, etc. The removal of refuse matters of all kinds is the most important sanitary matter that can claim the attention of health officers and the authorities of towns and cities.

It was not my purpose in the preparation of this paper to discuss the different methods of disposing of refuse matters. It is sufficient to say that in city, town, village, and country they ought to be speedily removed. The dry-earth system perhaps for villages and country can be made efficient. In large towns and cities provision should be made by taxation for the speedy and constant removal of all excreta to the country, that it may be utilized in regenerating the soil from which it came, instead of pouring polluted streams of filth into watercourses and charging the air with escaping effluvia from choked and stagnant sewers.

In conclusion, permit me to state that man is not thoroughly civilized until he learns to appreciate cleanliness; that he has not attained a boastful degree of intelligence while he remains ignorant of or utterly disregards the laws of health, and breathes an atmosphere about his home tainted with all the villainous effluvia of decomposing filth and excreta; that he is neither wise nor prudent when he digs a well and allows it to become the receptacle of the poisonous principles of every conceivable nuisance, and habitually drinks the polluted water.

Air and water are the most essential elements of life—both physiological foods with which the system must be constantly and abundantly supplied—and hence it stands to reason, about which there can be no dispute, that they should be of standard purity. No person would relish eating tainted meats, spoiled bread, decaying vegetables, yet they are not more unwholesome than putrescent air and polluted water.

Air and water are both nature's great solvents, and when confined and limited become the carriers of the germs of disease. How important then that we should know what we breathe and drink.

What the country needs most is sanitary reform; a general awakening and enlightenment on all matters pertaining to the prevention of disease and the preservation of health. Such knowledge should stand above every thing else. In ten years the amount of sickness in the country could be lessened tenfold, a greater amount of happiness secured, a more vigorous population, fewer physical and mental wrecks of manhood and womanhood, and the death-rate reduced in an astonishing degree. It was Flourens who made the delaration that "Man does not die, he kills himself." The physiological limit of human life has been placed by the same author at about one hundred years, but the highest average yet attained is less than forty years. If the estimate could be made of the vast preponderance of lives lost by preventable diseases and preventable causes over those from inevitable causes, mankind would be astonished, and the people would certainly rise and break the shackles of their spell-bound lethargy, start anew in the right course to live and make the most of their lives.

INDIANAPOLIS, IND.

Miscellany.

CHOLERA IN ITALY: "LET ILL ALONE."—Strange and pitiful reports are in circulation respecting the epidemic of cholera in Italy. The ravages of the disease have been considerable, but the terror which they have inspired surpasses all reasonable limits. Its most astonishing evidence is the ignorant panic-fear with which the poorer classes regard the simplest realities of medical treatment. At Naples the schools were being disinfected. A cry was raised that the children, healthy children, were to be taken to the cholera hospital. Frantic mothers, without the least occasion, stormed the schools, assaulted and nearly killed the officials, and rescued their children, whom no danger threatened. At Busca the inhabitants refused medical aid and attacked the doctors, thinking that the latter were commissioned to poison them. It would be difficult to say what reason these poor people might give for their vehement opposition to the means devised for their cure. There does not seem to be here any question of the rigor of quarantine. Cholera is an intractable and often a very rapidly

fatal disease. Cases of its most malignant form have appeared in Italy. Possibly, its own disastrous course and end have been attributed in such cases to remedies which have been used unsuccessfully, even though skillfully, to arrest it. If so, we have another instance of the frequently fallacious *post hoc propter hoc* view of events. A fair degree of inquiry, a little trouble taken in unraveling causes, with some belief in the good as well as the bad in mankind, are needed to bring the Italian populace and all others to just conclusions in such cases. The manly and sensible conduct of King Humbert and some of the clergy in visiting and helping the sick is a good omen, and may be expected to beget in the people generally a kindred spirit of cool deliberation.—*Lancet Correspondence.*

Ovarian Fibroma.—Dr. E. Von Quast gives, in the Medical Index for September, the details of an ovariotomy for ovarian fibroma. The patient was a multipara, forty-five years of age. The first evidence of the tumor was noticed nineteen months previous to her coming under Dr. Von Quast's care. A diagnosis of ovarian cysto-fibroma was made, and the operation was done in accordance with the most approved methods, including antiseptic precautions. The operation lasted one hour. The adhesions were extensive, and symptoms of shock very marked. Though all appropriate means for restoration were employed, and the patient brought to a state of temporary comfort, she died in eighteen hours after the operation from exhaustion, induced by profuse perspiration and diuresis. Of the tumor the author says: "Its rapid growth pointed to malignancy; the microscope, however, failed to recognize sarcomatous or cancerous cells, showing it to be a true fibroma of the ovary. When cut into it had a glistening white trabeculated structure; a number of very thin sections were made, which show throughout a number of minute cavities, lined with epithelium, and have in one or two instances a large cell with a nucleus presenting all the appearances of the ovum. The tumor weighed nearly three pounds, measured sixteen inches in circumference, and the pedicle had a diameter of three inches."

Dr. J. Collis Browne, the discoverer of "Chlorodyne," died recently at Mount Albion, St. Laurence-on-Sea, aged sixty-six years. It is said that this shotgun prescription brought him great wealth. He was formerly in Her Majesty's medical service in India, but has for many years lived in retirement with a princely fortune at his command. The ethical distinction which should be made between Dr. Browne and the common concoctor of patent medicines is not clear at this distance; but that he was esteemed a gentleman and respected as a physician is evident from the manner in which our British contemporaries announce his death.

Tenotomy for Pianists.—The limited power of extension possessed by the ring finger, says the *Wiener Medical Wochenscrift*, is sometimes of great inconvenience, especially to pianists. In the case of a man in whom this condition was very marked, Dr. Forbes recently divided the cross fibers connecting the tendon of the extensor communis for the ring finger with those passing to the middle and little fingers. The operation was almost painless and the wound healed quickly, leaving an almost imperceptible scar. Before the operation the finger could be raised scarcely one fourth of an inch, but after the tenotomy it could be extended one and one fourth inches, and lost none of its strength in consequence.—*Physician and Surgeon.*

Why Negroes are Black!—Surgeon-Major N. Alcock has contributed to Nature an interesting communication on the reason why tropical man is black, in which he suggests that as in the lowest animals pigment cells placed behind a transparent nerve termination exalt its vibration to the highest pitch, the reverse takes place when, as in the negro, the pigment cells are placed in front of the nerve terminations, and that the black pigment in the skin serves to lessen the intensity of the nerve vibrations that would be caused in a naked human body by exposure to a tropical sun; that, in fact, the pigment plays the same part as a piece of smoked glass held between the sun and the eye.—*Medical Press.*

It should not be forgotten that the Kentucky State Sanitary Council will meet in Elizabethtown on Wednesday and Thursday, October 1st and 2d. The programme gives promise of a session of rare interest.

The Mississippi Valley Medical Society has been in session at Springfield, Ill., during the week.

The Louisville Medical News.

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H. A. COTTELL, M. D., - - - - - - - - Editor.

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CHOLERA AND THE COMMA-BACILLUS.

Comma-bacilli are constant concomitants of the cholera process, being never found in the dejecta or intestinal canals of patients sick with or dead of any of the diseases which produce derangements or lesions of the *prima viæ*, such as diarrhea, the various forms of dysentery, typhoid fever, or cholera morbus. They may therefore be taken as pathognomonic of cholera Asiatica.

Upon this point Dr. Koch's investigations are full and to all appearances final. Having established the fact, and proved that the bacilli bear a constant numerical relation to the degree of the cholera process, the author proceeds to discuss the etiological relations existing between the microbe and the disease. Upon this question three different assumptions may be made.

First, "that the cholera process favors the growth of comma-bacilli by preparing a nutritive soil for them, and that consequently so striking an increase of precisely this kind of bacteria takes place." If this statement be true, then every person who develops the disease must have had comma-bacilli already in his body at the time of the attack. But since they are found only in places where cholera is prevailing, and in the intestines or dejecta (or things contaminated by the latter) of patients in whom the disease is demonstrably present, the hypothesis must be dropped.

Second, "that conditions are created by the disease, by means of which, among the many bacteria that are to be found in the intestines, one kind or another is changed and assumes the qualities observed in the comma-bacillus."

The sole instances of transformation in the qualities of bacteria rest on their physiological and pathogenic effects, not in their form. Specific bacteria when treated in a particular manner, as in the case of the anthrax bacilli, may lose their pathogenic properties, but they ever remain unchanged in form, and the comma-bacilli, though given abundant opportunity in more than twenty cultures to return to the known forms of intestinal bacteria, still preserved their own peculiar morphological character. These facts are the opposite of what must take place if the second proposition were tenable, and since the morphological characters of bacteria are notably constant, and in no instance has it ever been shown that a harmless can be converted into a harmful type, the assumption must be set aside as a baseless hypothesis.

The third assumption is, that "the cholera process and the comma-bacilli stand in immediate connection with one another; that the bacilli precede the cholera process and that they produce it."

If the cholera process could be reproduced in animals by inoculation with the comma-bacillus, the point would be at once definitely settled, but since no one of the lower animals has as yet proved susceptible to the disease, the question will still stand as mooted to many minds, though the author is satisfied of its truth. A great number of experiments were made upon mice, monkeys, cats, dogs, rabbits, poultry, and various other animals, with a view to establishing this point, but without success in reproducing the disease. In all cases where the animals were fed on choleraic dejecta or the

contents of the intestines of patients dead of the disease, the bacilli failed to appear in the intestines, having perished in the stomach under the action of the gastric juice. The only cases which gave any promise of success were those of rabbits and mice. Pure cultures of the bacilli were injected into the blood-vessels of the former and into the abdominal cavities of the latter. The rabbits were made ill, but recovered in a few days; the mice died in from twenty-four to forty-eight hours after the injection, and comma-bacilli were found in their blood, but in neither instance was a typical case of cholera obtained.

This is not remarkable, since it is well-known that other diseases of micro-parasitic origin peculiar to man can not be produced by inoculation in the lower animals, while some diseases of like character can not be transmitted from the brute to man. The experiments, therefore, do not disprove the specific character of the comma-bacillus. Indeed, it is maintained that the human being performs unconsciously upon himself an experiment which is tantamount to the voluntary eating of a small quantity of a bacillus culture. The instance is found in the case of laundry-women who are wont to contract the disease when washing linen soiled by the dejecta of cholera patients. It is almost certain that here the infection is brought about by the handling of food with fingers from which the fecal matter has not been removed, by bringing the fingers directly into the mouth, or by the spattering of the wash-water upon the lips of the women. This proposition is substantiated by the observations of the author and many native physicians.

The above instance is in keeping with the conditions which are known to attend the transmission of the disease from person to person during an epidemic in India. Indian huts in the cholera districts of the Ganges are built upon artificial hillocks raised from earth taken from a point near the buildings. The excavation which results is called a "tank." It soon fills with water, and is used as a sink for drainage, a place for bathing, and as a common washing tub for the clothing of the inhabitants, while its banks serve for the deposit of the feces. If the hut has a cesspool, it is always drained into the "tank." Cases of cholera infection may be readily traced to these tanks; and in one which was submitted to study it was found that the number of bacilli present in the water bore "a significant relation to the rise and fall of an epidemic at the time prevailing among the people who drank the water.

On the bank of this tank were thirty or forty huts, in which from two hundred to three hundred people lived, and seventeen of these had died of cholera. It could not be ascertained how many had been taken ill. . . . When the comma-bacilli were first found in tolerably large numbers, and in different parts of the tank, the small epidemic had reached its maximum. A short time afterward, when only isolated cases occurred, the comma-bacilli were to be found only at one spot, and in small numbers.

When they were first found they were so abundant that their number could not have depended alone on the dejecta that flowed into the tank, and on wash-water from cholera linen; an increase of them must have taken place. On the second investigation, on the other hand, their small number did not correspond to the numerous cases of illness that had preceded. If the latter had supplied the tank-water with bacilli, the bacilli must have been far more numerous this time in comparison with the number at the time when they were first discovered. Hence it can not be said in this case that the presence of the comma-bacilli in the tank was only a consequence of the cholera epidemic. The relation was such that the epidemic must have been a consequence of the bacilli.

THE dry method of sewage disposal, as practiced in Canton, is worthy the consideration of health officers of our small cities where wet sewage is not used. Canton, with a population of one million and a half densely packed together in narrow streets, is, considering its imperfect and dirty drains, a very healthy city. This healthful condition is credited to the daily careful collection of garbage, which is taken out of the city and used as fertilizer. —*The Physician and Surgeon.*

Bibliography.

Brain Exhaustion, with some Preliminary Considerations on Cerebral Dynamics. By J. LEONARD CORNING, M.D., formerly resident Assistant Physician to the Hudson River State Hospital for the Insane, Fellow of the New York Academy of Medicine, Physician to the New York Neurological Infirmary, etc. New York: D. Appleton & Co. 1884.

This work is devoted to a discussion of the economical questions involved in normal and morbid intellection, which in the author's opinion transcend all other fields of physiological research in importance. Like Beard and Hammond, of whose school he is a disciple, he believes that the exigences of modern life make greater demands upon the thinking apparatus than those of any previous age, while at the same time they present certain new factors which are especially prejudicial to healthy brain action. And certainly in our wonderful facilities for the furtherance of so-called human progress, the railroad, the telegraph, the thousand and one contrivances for crowding into one hour the work of four; the greed for gain which leads to sharp business competition, and commercial gambling; with intemperance, tobacco, and sexual excesses, undue haste in eating, food adulteration, and the inevitable accompaniment of dyspepsia, things which impel the man of our time to overtax, over-stimulate, poison, and underfeed his dominant nerve centers, the neurologist may find facts by the thousand upon which to build a most plausible theory.

The author approaches his subject from the side of the neuro-physiologist, and after a brief review of the literature of cerebral exhaustion, and four learned and ingenious chapters upon cerebral dynamics and metamorphosis, the emotions of the healthy and morbid mind, and memory in its healthy and morbid relations, proceeds to discuss systematically the pathology, clinical history, diagnosis, causation and treatment of the affection above named. The nature of the subject, the brief time during which it has been up for study, and the lack of any thing like a large array of facts derived from clinical or *post-mortem* study, compel the author to resort to theory and inference in many parts of the work; but the reader will find that he makes good use of facts whenever they can be marshaled in his service, and that in all his deductions he adheres to true scientific methods.

The work is certainly a useful contribution to our knowledge of this important subject, and while presenting the physician with many valuable suggestions as to the management of patients suffering from cerebral exhaustion, will scarcely fail to find a goodly number of readers among the cultivated laity, who, coming under the spell of the author's elegant diction, will find little difficulty in comprehending his ever lucid thought.

Manual of Physiology. A Text-book for Students of Medicine. By GERALD F. YEO, M. D., F. R. C. S. Professor of Physiology in King's College, London, etc. Published by P. Blakiston, Son & Co., 1012 Walnut Street, Philadelphia. 1884.

This is a handsome volume of 750 pages, with three hundred illustrations, and is the most complete work of the kind that has been placed before the profession for a number of years. The work gives evidence of the author's familiarity with the subject under consideration, and every page and line will bear the most critical investigation without finding cause for unfavorable comment. Doctor Yeo is a pleasing writer, and aside from the very clear and concise manner in which he deals with his subject, the style of his writing is such as to make it a pleasure to read his book. It is a work that I feel sure will be heartily indorsed by the profession throughout the land.

M. F. C.

"Messrs. Jansen, McClurg & Co., Chicago, will issue, about October 1st, a new work on the 'Principles and Practice of Medicine,' by Dr. N. S. Davis. The work is not a compilation, but an embodiment of the observations, thoughts, and experiences of the author during nearly fifty years of active medical practice. The matter is presented in the form of lectures delivered by him during his many years of teaching. The features which especially commend the work to the practitioner and student are the fullness with which the clinical history of the various diseases is given, and the explicit and detailed description of the methods of treatment which have been found most effective. The author's adoption of the metric system of weights and measures is worthy of notice and commendation. Although this system has been advocated by leading scientific and medical societies, it has come into use only to a limited ex-

tent. To assist in effecting this change, Dr. Davis has used the metric system throughout the work, giving, however, in brackets, the equivalents in apothecaries' measure. The volume is about the size of Bartholow's 'Practice of Medicine,' but more closely printed. The author is well known throughout the country as one of the ablest and most original thinkers in the profession, who has won a high reputation as a lecturer upon practical medicine; and the profession is to be congratulated upon having, in a permanent form, the rich results of his busy professional life."

Osteotomy and Osteoclasis, for Deformities of the Lower Extremities. By Charles T. Poore, M.D., Surgeon to St. Mary's Free Hospital for Children, New York; member of the New York Surgical Society, etc. New York: D. Appleton & Co., 1884.

Correspondence.

LONDON LETTER.

[FROM OUR SPECIAL CORRESPONDENT.]

The smallpox epidemic in London is now subsiding. According to a chart prepared at the office of the Metropolitan Asylums Board, showing when the disease was most prevalent and where the severity of the outbreak was less strongly marked, it appears that the date upon which the disease was at its height in London was July 4th, when there were 1,380 patients in the different hospitals under the management of the Board. Since then the decrease in the number of patients admitted daily, and also in the total number remaining under treatment, has been steady and marked, and has continued down to the present week. Now there are but 534 smallpox patients in all the hospitals of the board, in the camps at Dareuth and in the ships at Long Reach. On the other hand, fever is now slowly on the increase. The greatest number of patients which has been treated in the fever hospitals of the Asylums Board during the present year is 450, and this figure has just been reached. The present return shows scarlet-fever patients, males, 142; females, 171; enteric fever patients, males, 61; females, 69—or the total number of beds occupied, 443.

The cholera scare on the continent has been the means of crowding all the holiday resorts of Great Britain, and it has been calculated that the sum of £3,000,000 has been spent at home that would have otherwise found its way to the continent. Sir William Gull and Sir Andrew Clark, with other medical celebrities too numerous to mention, have taken places for the season in the Scottish Highlands. In fact London is now deserted and will continue to be so until the opening of the various medical schools upon October 1st.

The Prince of Wales accompanied by his wife and sons have just visited the Royal Infirmary, Edinburgh, in which building they spent upward of an hour. The foundation stone of this extensive charitable institution was laid with full Masonic honors by the Prince in 1870. The royal visitors, who were loudly cheered by a large gathering upon entering the building, passed through a number of the wards and evinced great interest in the work of the hospital and condition of the patients. The Princess was especially unremitting in her attention to the patients, with many of whom Her Royal Highness entered into conversation, kindly inquiring after their state of health and cause of illness. The chief wards visited were those named by the Queen as the Albert and Victoria, upon Her Majesty's visit to the infirmary two years ago. At the request of the managers two of the wards were named the Albert Edward and the Alexandra by the Prince and Princess of Wales respectively.

A recent writer discussing the part played by mercury in the alchemy and materia medica of the Chinese, says cinnabar was known to them in the seventh century before the Christian era, and its occurrence on the surface of the earth was said to indicate gold beneath. Their views on the transformation of metals into ores and ores into metals by heat and other means took the form of a chemical doctrine about a century before Christ, and there is now no reasonable doubt that the Arabian Geber and others (as stated by Dr. Gladstone in his inaugural address to the Chemical Society) derived their ideas on the transmutation of metals into gold and the belief in immunity from death by the use of the philosopher's stone from China. Among all the metals with which the alchemist worked, mercury was pre-eminent, and this is stated to be really the philosopher's stone, of which Geber, Kalid, and others spoke in the times of the caliphs. In China it was employed excessively as a medicine. On nights when

dew was falling a sufficient amount was collected to mix with the powder of cinnabar, and this was taken habitually till it led to serious disturbance of the bodily functions. In the ninth century an emperor, and in the tenth a prime minister, died from overdoses of mercury. Chinese medical books say it takes two hundred years to produce cinnabar, in three hundred years it becomes lead, in two hundred years more it becomes silver, and then, by obtaining a transforming substance called "vapor of harmony," it becomes gold. This doctrine of the transformation of the metals is two thousand years old in China. The Chinese hold that it not only prolongs life, but expels bad vapors, poisons, and the gloom of an uneasy mind.

Application has been made to the British Government, through the Foreign Office, for the appointment of an official delegate from England to the International Congress of the Red Cross Societies for aid to the wounded in war, which is being held at Geneva. Surgeon-General Longmore, C. B., Professor of Military Surgery at the Army Medical School, Netley, has been appointed by the Government, and has left England for the purpose of attending the Congress. Surgeon-General Longmore assumed this capacity in a former international congress, which resulted in an international convention, to which all the European nations, and subsequently America, gave their consent.

A return showing the efficacy of vaccination has been issued, entitled "Smallpox (Army and Navy)." In 1882, the annual strength of the army was 174,557, and the number of deaths from smallpox was five, or in the ratio of .3 per 1,000. The number of men entering the service that year was 26,129. In the navy a similar excellent result was noticeable. In 1882, the mean strength was 57,067; the number of deaths two, or a proportion of .3 per 1,000; and 6,998 men entered in the year.

The presence of cholera on the continent has induced a special examination into the arrangements of the London water companies, and each of these bodies has presented a special report concerning the state of its works. So far as the statements go they are satisfactory in their character. In addition, the inhabitants of the metropolis have already been answered by the Thames Conserviency Board that the river is virtually free from pollution above the spot whence the companies take their supply. In discussing the water-supply of the metropolis it is often made to appear as if it came principally from the Thames. The fact is that the Thames furnishes not very much more than half the water consumed in the districts of the London water companies. It is pointed out that the proportion taken directly from the chalk is increasing, the ratio being nearly double what it was some twenty years ago. The total volume of water which now goes into London from rivers and deep wells is immense. The average daily supply last month was not far short of one hundred and twenty-three million gallons. The average daily supply for the year will of course be less, but the companies must be prepared to meet the maximum demand. Hitherto they have done this, and have satisfied the requirements of a population of five millions. The entire subject was investigated by a Royal Commission in 1869, and they reckoned that two hundred million gallons per day was the "highest demand" that need be anticipated. But evidently the consumption is traveling very fast toward that limit, and some reconsideration of the subject can not be far off. It is considered that supply by meter will at last have to be adopted, as there is an enormous waste under the present system.

Dr. Morell McKenzie recommends a drop or two of nitric acid in a glass of cold water to be taken at short intervals in cases of chronic eczema.

SEPTEMBER, 1884.

Selections.

PUERPERAL ECLAMPSIA.—The treatment of puerperal eclampsia, to be successful, must be prompt. When the case has advanced so far that the patient is rendered profoundly unconscious by the intense cerebral congestion and edematous infiltrations produced by it, treatment can do but little. Derangements of the kidneys, which are very prevalent here, have a strong predisposing influence, and probably account for the fact that I have met with four cases in less than six months. No doubt the condition of the mind renders some patients susceptible to any irritating influence, and has considerable influence in determining the attack, for the same reason that nervous children are more apt to suffer convulsive attacks from any periph-

eral irritations than their less irritable and impressionable companions. I think chloral and bromide of potassium are more efficient in controlling the convulsions than injections of morphia, so highly extolled by Loomis, of New York City.—*Dr. H. C. Johnson in Physician and Surgeon.*

CHILDREN'S TONIC.—The most pleasant and palatable disguise for quinine may be extemporized as follows:

℞ Quinia sulph. ..... grs. xl;
Acid, tannic ..... grs. xx;
Tinct. opii camph. ..... ℥ ss;
Tinct. cinchona ..... ℥ ss;
Spts. lavender co. ..... ℥ iij;
Syrup simp., ad. ..... ℥ iv. M.

Shake well before using. The dose will be usually one teaspoonful three times a day, but the amount of quinia desired to be administered should govern the size of the dose. It will make a beautiful, creamy mixture if the quinia and tannin are rubbed together on a pill-tile or a sheet of paper with a spatula until all lumps disappear; then put in a suitable bottle and first add the paregoric, shaking at once, then the cinchona and lavender, followed by the syrup.—*Canada Lancet.*

DR. KOCH was born in 1843, and when twenty-three years of age graduated, in Germany, as a doctor of medicine. For some six years he labored as an assistant in an obscure hospital, and in 1872 got an appointment at Wollstein, where he continued for seven years. His first marked step upward was gained by the publication of methods for coloring microscopic slides, and more particularly those of bacteria. Since then he has been principally engaged in those researches which have made him famous.—*Medical and Surgical Reporter.*

REMOVAL OF A CYSTIC SPLEEN.—Mr. Knowsley Thornton removed a cystic spleen, by abdominal section (median incision), at the Samaritan Hospital on Thursday, the 22d ult. The patient was a single girl, aged nineteen, and tumor had been growing slowly for two years. Latterly it had increased much more rapidly, and caused much pain. Up to Thursday morning the patient was progressing quite satisfactorily. During the tying of the pedicle the patient suffered severely from shock, and for some minutes her life was in great danger; but she revived immediately the tumor was cut away and the drag taken off the pedicle. The specimen will be shown, and the further progress of the case reported at the Pathological Society.—*Birmingham Medical Review.*

LITHOTRITY EXTRAORDINARY.—Dr. R. Cran, of Upper Luckimpore, Assam, states that stone is not so rare a disease in Assam as Dr. Partridge thinks. He relates the death of a patient, "after a most peculiar operation, which I shall describe as showing the advanced state of surgery to which they have attained. The priest, having placed the patient on his back, raised well the anterior wall of the abdomen, placed a stone on one side of it, and belabored the other with a second stone, desisting when the calculus was supposed to have been crushed. The patient died a few days after the operation. This was told me by the first man I operated on."—*Birmingham Med. Review.*

"PASTEURIZED" beer is now being sold in Canadian cities. The process of Pasteurization requires the heating of the liquid to a point sufficient to destroy the vitality of yeast cells and other germs. This is accomplished by a temperature over 131° F., and the heat should be applied for a considerable time. If the process is imperfectly performed, the cells will develop as soon as circumstances are favorable.—*Medical and Surgical Reporter.*

ARMY MEDICAL INTELLIGENCE.

OFFICIAL LIST of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from September 14, 1884, to September 20, 1884:

Caldwell, D. G., Major and Surgeon, granted leave of absence for one month and twenty days, to commence about October 15, 1884. (S. O. 95, Hdqr's. Div. of the Mo., Aug. 16, 1884.) *Cronkhite, Henry M.*, Captain and Assistant Surgeon, from Dept. of the Platte to Dept. of the Missouri. *Taylor, Arthur W.*, First Lieutenant and Assistant Surgeon, from Dept. of the Missouri to Dept. of the Platte. (Par. 1, S. O. 215, A. G. O., Sept. 13, 1884.) *Wilson, Wm. J.*, Captain and Assistant Surgeon, from Dept. of Dakota to Dept. of the East; *Gardiner, J. de B. W.*, Captain and Assistant Surgeon, from Dept. of Arizona to Dept. of the East; *Corbusier, Wm. H.*, Captain and Assistant Surgeon, from Dept. of the East to Dept. of Arizona; *La Garde, L. A.*, Captain and Assistant Surgeon, from Dept. of the Missouri to Dept. of Dakota. (Par. 1, S. O. 220, A. G. O., Sept. 19, 1884.) *Barrows, C. C.*, First Lieutenant and Assistant Surgeon, granted one month's leave of absence, with permission to apply to the proper authority for an extension of one month. (Par. 4, S. O. 86, Hdqrs. Dept. of Arizona, Sept. 13, 1884.)